g (girder) – This represents unit weight of the concrete in the girder of the composite section. (lbs/ft^3)

A.3   Initial Calculations

Following the User Inputs is the Initial Calculations section of *Cracked Beam*. In this section several preliminary calculations are displayed for the user. The four subsections of this section are Section Properties, Transformed Section Properties, Concrete Properties, and Miscellaneous. While the user may not need some of the output in this section, all calculations are required in the later sections of the spreadsheet program. A brief description of the calculated section properties follows.

A_c – This cell gives the total area of the concrete in the cross-section, including the area of the holes where the tendons are located.

Z_t – This represents the section modulus of the cross-section measured to the top fiber of the section. It is obtained by dividing the gross moment of inertia, **I**, by the distance from the neutral axis to the top fiber of the cross-section, y_t.

Z_b – This represents the section modulus of the cross-section measured to the bottom fiber of the section. It is obtained by dividing the gross moment of inertia, **I**, by the distance from the neutral axis to the bottom fiber of the cross-section, y_b.

y_t – It is the distance from the neutral axis to the top fiber of the cross-section.

y_b - It is the distance from the neutral axis to the bottom fiber of the cross-section.

I – This cell represents the gross moment of inertia about the neutral axis of the uncracked cross-section. It includes all trapezoids as well as the area of the holes in the concrete where the tendons are located.